PEACE/WILLISTON
FISH & WILDLIFE
COMPENSATION
PROGRAM

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Peace/Williston Fish and Wildlife Compensation Program Annual Report 2003/04

B.G. Blackman and M.D. Wood

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The Peace/Williston Fish & Wildlife Compensation Program is a co-operative venture of BC Hydro and the provincial fish and wildlife management agencies, supported by funding from BC Hydro. The Program was established to enhance and protect fish and wildlife resources affected by the construction of the W.A.C. Bennett and Peace Canyon dams on the Peace River, and the subsequent creation of the Williston and Dinosaur Reservoirs.

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Website: *www.bchydro.com/pwcp/*

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PEACE /WILLISTON FISH AND WILDLIFE COMPENSATION PROGRAM

ANNUAL REPORT 2003/04

STEERING COMMITTEE:

Uli Bergmann (BC Hydro)
Kevin Conlin (BC Hydro)
Ted Down (MWLAP) – Chair
John Metcalfe (MWLAP)

FISH TECHNICAL COMMITTEE

Ted Zimmerman (MWLAP)– Chair
Nick Baccante (MWLAP)
Alan Laidlaw (BC Hydro)
Cynthia Powell (BC Hydro)
Ken Ashley (MWLAP - Technical Advisor)

WILDLIFE TECHNICAL COMMITTEE

Doug Heard (MWLAP) – Chair
Alan Chan-McLeod (BC Hydro)
John Elliott (MWLAP)
Ed Hill (BC Hydro)

FISH BIOLOGISTS:

Brian Blackman (BC Hydro) - Senior Biologist
Dawn Cowie (BC Hydro)
Arne Langston (BC Hydro)
Randy Zemlak (BC Hydro)

WILDLIFE BIOLOGISTS:

Mari Wood (BC Hydro) - Senior Biologist
Fraser Corbould (BC Hydro)

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PROGRAM ADMINISTRATION

Membership on the Steering Committee (SC) has changed with Ted Down serving his first year as chair and with Kevin Conlin replacing Dave Cattanach as one of the BCH representatives. Membership on the Wildlife (WTC) and Fish (FTC) Technical Committees remained the same as the previous fiscal (except that Gerry Leering is sharing duties with Nick Baccante), with Doug Heard (WTC) and Ted Zimmerman (FTC) serving the first year of their chair term.

Fish biologists Brian Blackman, Arne Langston, and Randy Zemlak, and wildlife biologists Mari Wood and Fraser Corbould, continued as full-time staff responsible for administering, managing, and conducting program projects and activities. Fish technician Dawn Cowie was hired for a 3rd year full-time temporary term.

Administrative activities included preparation of the 2002/03 Annual Report (Wood and Blackman 2003), tracking program expenditures, managing contracts, preparing quarterly reports on program activities, preparing performance review plans, and updating staff safety training. A number of consulting firms and contractors were employed to undertake work on a variety of projects.

PROGRAM PLANNING

The Fish Program held two in-person meetings to discuss the current year's projects and finances, and prepare a budget for 2004/05 for submission to the SC. The Fish Program Technical Committee also held a meeting to discuss technical issues in May. The Wildlife Program held one in-person meeting in December to address the same tasks. Both staff and TC members attended a planning session with the SC in October. All program biologists attended SC meetings in January; senior biologists from the Fish and Wildlife programs also attended the annual January SC meeting to present the 2004/05 budget to the SC. Informal meetings were held with individuals, consultants, and stakeholder representatives to discuss current and potential projects for the future.

PUBLIC CONSULTATION

Program Staff

Fish Biologist Brian Blackman made a presentation at a workshop held at Tsay Keh and provided input at WUP (water use planning meetings -fisheries and foreshore development committees). The PWFWCP donated a Live Sheep Capture excursion to the GOABC annual fundraiser auction in March, which raised funds for GOABC.

The PWFWCP and specific fish and wildlife projects were discussed through informal meetings and talks with industry representatives, club members, guide outfitters, trappers, contractors, students, tourists, and other government agencies. Detailed project information and technical reports were also discussed with, and disseminated to consultants, biologists, and researchers.

Program biologists also contributed to PWFWCP public consultation activities handled by BC Hydro's Public Affairs department (see below) including drafting and editing project articles for *Natureline* (the PWFWCP's official newsletter), and providing input to the development of the 2004/05 Public Consultation Plan. Program staff coordinated with UNBC personnel, the first in a series of annual lectures at the university, which will consist of presentations by a guest lecturer and by a UNBC student, whose research was funded through the PWFWCP .

BC Hydro Public Affairs

All program reports (fish, wildlife and administrative) that have been produced since the inception of the program were made available on the PWFWCP's website; new reports will be added as they are completed. Advertisements for the PWFWCP were placed in the 2003/04 Freshwater Fishing Regulations Synopsis, and the Hunting and Trapping Regulations Synopsis. The 13th issue of *Natureline* was drafted. Program updates were distributed to stakeholders and letters were sent to stakeholders during special events.

FISH PROGRAM

Brian Blackman

2003/2004 PROJECT LIST

Map	Task #	Project	Location
1	03-01	Project Maintenance (WSC)	Parsnip
2	03-02	Stocking Program	Watershed
	03-03	Report Writing Previous Years	Office
3	03-04	Classroom Kokanee * (DFO)	Watershed
4	03-05	Dinosaur Reservoir Char	Dinosaur
5	03-06	Dinosaur Reservoir Habitat Improvements	Dinosaur
6	03-07	Small Lake Stocking Evaluations	Watershed
	03-08	Pygmy Whitefish Report Publication (UBC)	Office
7	03-09	Parsnip Grayling Population Index	Parsnip
8	03-10	Bull Trout Index	Finlay/Parsnip
9	03-11	Kokanee Escapement Survey	Watershed
	03-12	Extension	Watershed
	03-13	Grayling Recovery Plan Workshop (WLAP)	Office
		ENRENCHMENT FUND PROJECTS	
10	03-14	Reservoir Bathymetry Project (BCH)	Reservoir
	03-15	Lake Trout Synthesis (data summary)	Office
	03-16	Equipment from Entrenchment Fund	Office
	03-17	Administrative Assistant	Office
11	03-18	Grayling Distribution Ingenika	Finlay
12	03-19	Pygmy Whitefish Distribution	Finlay
		Technical Assistant	Watershed
13	03-20	Grayling Movements using Elemental Signatures (UNBC)	Watershed

(Co-operative projects with:)

DFO Dept of Fisheries and Oceans, Habitat Conservation Trust Fund, Mackenzie Nature Observatory, Mackenzie Fish and Game Association, Canfor Ltd., BC Hydro office at the W.A.C. Bennett Dam Lions club of Hudson's Hope and the Hudson's Hope Rod and Gun Club.
UBC University of British Columbia – DR. D. McPhail co author
WLAP Ministry of Water Land and Air Protection - funded by FWFWCP
UNBC University of Northern B.C. graduate student funded by PWFWCP
WSC Water survey of Canada
BCH B.C. Hydro

2003 Fish Program Project Locations

1	Project Maintenance	2	Stocking
3	Classroom Kokanee	4	Dinosaur Reservoir Char
5	Dinosaur Habitat Improvements	6	Small Lake Stocking Evaluations
7	Parsnip Grayling Index	8	Bull Trout Index
9	Kokanee Escapement	10	Reservoir Bathymetry
11	Ingenika R. Grayling Distribution	12	Pygmy Whitefish Distribution
13	Grayling Movements using Elemental Signatures		

PROJECT SUMMARY

1. PROJECT MAINTENANCE (#03-01)

Objective: To provide maintenance of the Dina Creek and Dina Lake #3 inlet spawning habitat improvement projects; costs of temperature sensors maintained by Water Survey of Canada, monitor thermographs in tributaries of the Parsnip River; and address stream access problems in small tributary streams entering Williston Reservoir.

2003/04 (Year 7 of ongoing): The Dina Creek coarse fish barrier was adjusted, some debris was removed, and spawning gravel was added in preparation for the rainbow trout spawners. Access to the inlet stream of Dina Lake #3 was also improved. Project biologists assisted with the Dina Creek Field Day, where local students learn about stream ecology. Raw water temperature data was received from Water Survey of Canada from thermographs located at their flow gauge stations. Thermographs on the Parsnip River tributaries were maintained and the data placed in a stream temperature database. Thermographs in the tributaries of the Parsnip River were downloaded. One trip was made to inspect potential stream access problems in reservoir tributary streams. This project contributes to the Program Strategic Objectives by undertaking measurable projects which enhance the abundance of native fish. This project also encourages public involvement and increases recreational opportunities.

2. STOCKING PROGRAM (#03-02)

Objective: To provide funds to cover the costs, to B.C. Fisheries Society for the rearing and release of fish for PWFWCP projects.

2003/04 (Year 15 of ongoing): Dinosaur Reservoir was stocked with 5,000 catchable (200g +) rainbow trout, which were fin clipped as part of an ongoing evaluation of stocking in the reservoir. In addition, 6,000 rainbow trout were released into three small lakes and 4,000 brook trout were released into one small lake. R. Zemlak attended the Provincial Small Lakes Committee meeting and provided a presentation on pygmy whitefish. This project meets the Program Strategic Objective of increasing recreational opportunities.

3. REPORT WRITING PREVIOUS YEARS (#03-03)

Objective: To provide staff time and funds for the completion and distributions of reports from previous years and to have them placed on the Program website.

2003/04 (Year 6 of Ongoing): Reports completed this year include:

No. 276 2001-2002 Arctic grayling (Thymallus arcticus) Fry Surveys in the Omineca and Osilinka Rivers. D.M. Cowie and B.G. Blackman. November 2003. 18pp. plus appendices.

No. 278 Aerial boat counts on 17 northern lakes of British Columbia, 2002. E.B. Murphy and R.J. Zemlak. December 2003. 14pp plus appendices.

No. 279 Pygmy Whitefish Studies on Dina Lake #1, 2001. R.J. Zemlak and J.D. McPhail. January 2004. 35pp plus appendices.

No. 280 Dina Lake #1 Pygmy Whitefish (*Prosopium coulteri*) Study: Stomach Contents Analysis #2, 2001. M. Stamford. January 2004. 13pp plus appendices.

No. 281 Fish stocking assessment of Dina Lake #7, 2001. R.J. Zemlak and D.M. Cowie. January 2004. 14pp plus appendices.

No. 282 Fish stocking assessment of Dina Lake #3, 2001. R.J. Zemlak and D.M. Cowie. January 2004. 14pp plus appendices.

No. 283 Fish stocking assessment of Bruce Lake, 2002. R.J. Zemlak and D.M. Cowie. January 2004. 16pp plus appendices.

No. 284 Fish stocking assessment of Pothole (43 Mile) Lake, 2001. R.J. Zemlak and D.M. Cowie. January 2004. 14pp plus appendices.

No. 285 Fish stocking assessment of Lions Lake, 2001. R.J. Zemlak and D.M. Cowie. January 2004. 12pp plus appendices.

No. 287 Dinosaur Reservoir fish collection summary 2001. E.B. Murphy and B.G. Blackman. February 2004. 15 pp

No. 288 Discrimination of habitat use by slimy sculpin (*Cottus cognatus*) in tributaries of the Williston Reservoir using natural elemental signatures. A.D. Clarke, K. Telmer and J.M. Shrimpton. March 2004

1997 Arctic grayling habitat utilization studies in the Table and Anzac Rivers has been completed and is under review. A final draft of the Development of a Premier Northern River Fishery: The Mesilinka River 1992-99, has been completed and is waiting final approval. Dinosaur Reservoir 2002 Fish Collection Summary has been completed and is awaiting final approval. A comparative review; relative abundance of Arctic grayling (*Thymallus arcticus*)in the Parsnip, Table and Anzac Rivers 2001, has been completed and is awaiting final approval. Identification of potential lake trout spawning areas in the Dinosaur Reservoir has been completed and is awaiting final approval. This project meets the Program Strategic Objective of sharing information.

4. CLASSROOM KOKANEE (#03-04)

Objective: To assist with a program to raise kokanee in a classroom environment, as an educational tool, in Mackenzie(3 schools), Hudson's Hope, Chetwynd and Ft. St. John schools.

2003/04 (Year 8 of ongoing): This project was conducted in conjunction with the local School District, Department of Fisheries and Oceans, Habitat Conservation Trust Fund, Mackenzie Nature Observatory, Mackenzie Fish and Game Association, Canfor Ltd., BC Hydro office at the W.A.C. Bennett Dam, Lions Club of Hudson's Hope, and the Hudson's Hope Rod and Gun Club. In 2003, kokanee reared in classrooms the previous winter were released into local streams, art contest winners were selected and prizes awarded. Clearwater Trout Hatchery provided 50 kokanee eggs per school this year. The eggs were provided to the schools in Ft. St. John, Hudson's Hope, Chetwynd and Mackenzie. This project meets the Program Strategic Objective of encouraging the public to participate in program activities in increases public awareness of the program and general fisheries issues.

5. DINOSAUR RESERVOIR CHAR ASSESSMENT (#03-05)

Objective: To gather baseline information on lake trout in Dinosaur Reservoir to provide specific life history information in order to develop species specific management plans for Dinosaur Reservoir.

2003/04 (Year 1 of 3): In 2003, acoustic radio tags were implanted into nine mature (>50 cm) lake trout from Dinosaur Reservoir. These fish were tracked on a monthly basis throughout the year and on a weekly basis during late September and October. The fish remained for the most part near the tailrace of W.A.C. Bennett Dam and no discernible movement pattern was noted that would indicate movements to possible spawning areas. However, no tracking was done at night. There were some downstream movements into the canyon and even some movement into the main body of the reservoir (downstream from Johnson Creek). None of the tagged lake trout moved out of the reservoir into the Peace River . In addition, a volunteer creel was conducted using local angers to collect age information for angler caught lake trout. The growth rates for the lake trout collected from this creel, from samples collected during the capture of lake trout for tagging and from the fish assessment (see project 03-06) indicated that the lake trout were growing at a slower rate than anticipated. The oldest lake trout was 25 years old and most fish were 10 years old before they reached 50 cm in length (size at maturity). The draft report is under review. This project meets the Program Strategic Objective to evaluate the status of fish and their habitat.

6. DINOSAUR RESERVOIR HABITAT IMPROVEMENTS (#03-06)

Objective: To provide improved habitat in Dinosaur Reservoir through the addition of cover in the form of woody debris, floating platforms and aquatic vegetation.

2003/04 Objectives: (Year 5 of 7) Woody debris was added in seven sites (in addition to the two sites from 2002) to provide improved cover for fish species rearing in the reservoir. Five floating vegetation platforms were placed in two of the woody debris sites. A second year of fish population assessments were conducted to provide baseline fish utilisation information. These assessments were also used to the evaluate benefits of habitat improvement projects and serve as a baseline for long term monitoring of reservoir fish populations as per the Dinosaur Reservoir Management Plan. The fish population assessment also collected additional information on juvenile lake trout. Relative numbers and species composition was similar to the data collected in 2002 and from the recapture of marked fish it appears that rainbow trout are closely associated with the shoreline areas (higher recapture rate than other species) and that rainbow trout tend to remain in one area (all recaptures were at the sites where the fish were tagged). Analysis of the data showed a high variability between the different sites, but the overall capture rates were remarkably consistent between passes. There was also an increase in the number and size of fish captured from sites where woody debris was added. This data is preliminary and the true increase may be masked because fish are more difficult to capture from the enhanced areas with woody debris. In 2004, alternative capture methods will be investigated to reduce this problem. The draft report has been completed. This project meets the Program Strategic Objective to undertake and evaluate habitat enhancement projects, as well as evaluate the status of fish and their habitat.

7. SMALL LAKE STOCKING EVALUATIONS (#03-07)

Objective: Overall: To evaluate the fish populations in small lakes that PWFWCP are responsible for and ensure the goals of the stocking program are met.

2003/04 Objectives: To evaluate the fish populations (native and introduced) of Hart, Pete and Wright Lakes.

2003/04 (Year 5 of ongoing). An evaluation was conducted on Pete Lake and the preliminary report has been completed. Hart Lake was dropped because of work conducted by Peace Region staff and Wright Lake assessment was not completed because the field program was cut short due to bear problems. This project meets the Program Strategic Objective of evaluating enhancement projects.

8. PYGMY WHITEFISH REPORT PUBLICATION (02-08)

Objective: To produce a journal report on the two year study of pygmy whitefish in Dina Lake.

2003/04 (Year 2 of 2) The report in consultation with Dr. McPhail is 75% complete and is anticipated to be submitted to the "Environmental Biology of Fishes" journal by August 2004. This project meets the strategic objective of information sharing.

9. PARSNIP ARCTIC GRAYLING POPULATION INDEX (03-09)

Objective: To continue population index surveys, based on findings of previous studies and as part of long term population monitoring, as outlined in the draft "Arctic Grayling Action Plan". In addition, collect samples to document effects of stream flows and water temperature on growth rates and recapture PIT tagged grayling to document movements between these watersheds and gather individual growth data.

2003/04 (Year 1 of ongoing): Several years have been spent developing methods and setting up the index program. Seining of the index sites on the Parsnip River was completed on schedule and the number of young of the year grayling and mountain whitefish was lower than in previous years, but one year old grayling and mountain whitefish numbers were comparable. Adult counts were conducted on the index sites in the Table and Anzac rivers. The grayling counts from the Table River have remained very consistent since 1995 and this year the counts from the Anzac River have recovered slightly from the steady decline seen since 1997. Just under 200 samples were collected for growth and age analysis, but we were unable to recapture any of the grayling marked with PIT (passive integrated transponder) tags as one year olds in the Parsnip River. This project meets the Program Strategic Objective to evaluate the status of fish and their habitat.

10. BULL TROUT INDEXING (03-10)

Objective: To determine bull trout escapement at the established index sites (Davis River) and compare to previous years data and to identify spatially separated potential index sites within the program area.

2003/04 (Year 1 of 5) The survey of the index sites in Davis River found that the aerial counts were lower than previous years but that the ground counts were not. Poor water visibility was blamed for the lower aerial-based counts. Arial surveys, were also conducted on additional systems but no large concentrations of spawners were observed. This project meets the Program Strategic Objective to evaluate the status of fish and their habitat.

11. KOKANEE SPAWNER DISTRIBUTION SURVEY (02-11)

Objective: To determine if a viable hatchery introduced population of kokanee has been established in Williston Reservoir.

2003/04 (Year 2 of 5) A single survey was conducted from September 15-19 (the 2002 peak spawning period) and distribution was similar to 2002. The numbers were up from 81,000 in 2002 to 199,000 in 2003. The system with the most kokanee was Osilinka with 115,000, followed by Omineca with 54,400, which included 35,500 in Germansen River (a tributary). Manson River had 12,600; Ingenika 11,000; Finlay 3,800; and Nation River 1,000. No kokanee were observed in Carbon Creek again this year and Dunlevy Creek was down to 16 fish. This project meets the Program Strategic Objective to evaluate the status of fish and their habitat and evaluation of enhancement projects.

12. EXTENSION (02-12)

Objective: To provide staff time to provide information to agencies or groups to improve habitat protection of critical habitats.

2002/03 (Year 1 of continuing) Program staff provided input into the general Water Use Planning (WUP) program as well as providing input to the fisheries and foreshore development committees. Input was also provided to BCH debris management with respect to fish access problems caused by debris and development of breakwaters to keep debris out of stream mouths. This project meets the Program Strategic Objective of sharing information.

13. GRAYLING RECOVERY PLAN WORKSHOP (03-13)

Objective: To develop an Arctic grayling recovery plan which will be written in the same format as the "Provincial Species Recovery Plans".

2003/4 year 1of 1 (1 of ongoing) This project has changed from the original concept of a recovery plan acceptable by the Province based on the action plan developed by the fish TC, to a multi year Provincial Species Recovery Plan. Two meetings were held, one in November and one in March. Present state of knowledge, data gaps and the hiring of a facilitator was discussed. This project should meet the Program Strategic Objective to enhance stocks impacted by the reservoir.

03/04 STRATEGIC ENTRENCHMENT FUND PROJECTS

14 WILLISTON RESERVOIR BATHYMETRY MAP (#03-14)

Objective: To develop detailed contour maps of the drawdown / littoral zone of Williston Reservoir to be used in the development of plans for work on the Reservoir.

2003/04 (Year 3 of 3) PWFWCP contributed $60,000 towards the development of a bathymetric map. The project is partnered and led by BC Hydro vegetation staff (contributed $100,000) in

cooperation with BC Hydro photogrammetry staff. The work was nearing completion in late May. This project meets the Program Strategic Objective of collecting and sharing information.

15. Lake Trout Synthesis (#03-15)

Objective: This project will compile the known fish and fish habitat information on lake trout populations in the program area as outlined in the Operational Plan. It will increase our level of understanding of this species by summarising existing information and identifying data gaps, which can then be used for scoping other projects and which will lead to developing species specific action plans.

2003/04 (Year 1 of 1) This program was not initiated this year because of time commitments.

16. Strategic Entrenchment Fund Equipment (#03-16)

Objective: This project will provide the acquisition of specialised equipment required for conducting field projects for the Peace/Williston Fish and Wildlife Compensation Program.

2003/04 (Year 2 of 3) A new oxygen meter, microscope and two new electrofishers (to meet WCB regulations) were purchased.

17. Administrative Assistant (#03-17)

Objective: To provide administrative assistance to the program Biologists in order to reduce the administrative workload and free up their time to do biology.

2003/04 (Year 2 of 3) Unfortunately, this position has been impossible to fill due to staffing cutbacks.

18. Distribution of Grayling Fry in the Ingenika River (#03-18)

Objective: Overall: To determine the distribution and relative abundance of Arctic grayling fry in Williston Reservoir tributary streams. Surveys were conducted in the Omineca in 2001, Osilinka 2002, and are planned for the Ingenika in 2003, Nation 2004 and Parsnip Tributaries 2005.

2003/04 Objectives: (1)To determine the distribution and relative abundance of Arctic grayling fry in the Ingenika River; (2) to map potential spawning areas for possible future study based on the distribution of 0+ grayling; (3) and to compare habitats used in the Ingenika with those described in the Table/Anzac study.

2003/04 (Year 1 of 1): 95 electrofishing sites were conducted and grayling fry were found in the lower 80 km of the mainstem of the Ingenika River and no fry were captured in the tributaries. There was evidence of stranding but not to the extent observed in the Table, Anzac, and Osilinka Rivers. In the Ingenika 46% of the fry were captured from isolated pools, 36% were in side channels and the remaining 18% were captured from mainstem habitats. This project meets the Program Strategic Objective to evaluate the status of fish and their habitat.

19. Pygmy Whitefish Distribution Study (#03-19)

Objective: To determine the most northern distribution of pygmy whitefish within the Williston watershed and intimately ensure longevity of the species.

2003/04 (Year 1 of 2) Pygmy whitefish were confirmed from Quentin (Kwadacha->Finlay River) and Weissener Lakes (Fox ->Finlay River) but none were found in Thutade Lake (headwaters of the Finlay River). This project meets the Program Strategic Objective to evaluate the status of fish and their habitat.

20. Discrimination of Arctic grayling movement patterns using elemental signatures (#03-20)

Objective: To determine the best method of discriminating grayling habitat utilisation and movement patterns. Water samples and a small number of samples of an abundant resident fish species (sculpin) will be analysed to identify unique elemental signatures that correspond to specific locations within tributaries of the Williston reservoir. Year two of this project will utilise the chemical signatures determined to provide the highest spatial and temporal resolution and be expanded to a larger sample size of an abundant resident fish species and grayling.

2003/04 (Year 1 of 2) Water and sculpin samples were collected from a number of streams throughout the watershed. Analysis has shown that distinct elemental signatures can be determined for the various streams throughout the watershed and that these signatures are reflected in the bony structures of fish species rearing in those waters. The initial analysis demonstrated a high level of resolution in elemental signature such that not only could different streams be distinguished but it may be possible to detect differences within streams. In 2004/05, additional water samples will be collected and bony structures will be collected from Arctic grayling. These samples will be analysed to determine which areas these fish were rearing in at different stages of their life history. The project meets the Program Strategic Objective of undertaking applied research and partnering.

PWFWCP Fish Research Legacy Fund

This agreement to provide funding for graduate student research was signed early in the spring of 2003.

Fish Resources Catalogue

This project to document historical fish distribution in the watershed is still in progress and some additional data points are being added at the request of the TC. Photo illustrations for small fish are also being added and it is anticipated this project will be completed during the summer of 2004. This project meets the Program Strategic Objective of sharing information.

Freshwater Fishes of BC

We are looking for other parties interested in co-funding a book entitled "The Freshwater fishes of B.C., by Dr. McPhail". Cost estimates have been provided by two University Press Groups. This project meets the Program Strategic Objective of sharing information.

FISH PROGRAM – FINANCIAL SUMMARY

Funds available for the Fish Program in 2002/03 were $608,940 and expenditures during the fiscal year totalled $594,585. Projects accounted for $359,663 or 62% of the expenditures and 40% of staff time. Administration costs were $144,862, (24%), which was slightly lower than budgeted because $42,000 in contingency costs were included in the original budget. Planning costs were $79,533 (13%) and Public Consultation costs were $10527 or 2% of expenditures, with an additional $24,070 from the base fund as well, which would bring the value up to 6% of the program. This year entrenchment fund projects costs were $338,973. This cost includes with staff time, vehicle and equipment costs.

Staff time commitments were 27% (254 days) for Administration, 18% (166 days) for Planning, 3% (26 days) Public Consultation and 52% (491 days) for Projects (including entrenchment fund projects).

Monies spent from the Entrenchment Fund to date include $171,480 in 00/01; $300,267 in 01/02 ($339,887 was spent but the base budget was $39,620 under spent); $117,267 in 02/03; and in 2003/4 the expenditures were ($933,559-less the base budget of $608.940) $324,619 for a total of $913,632.

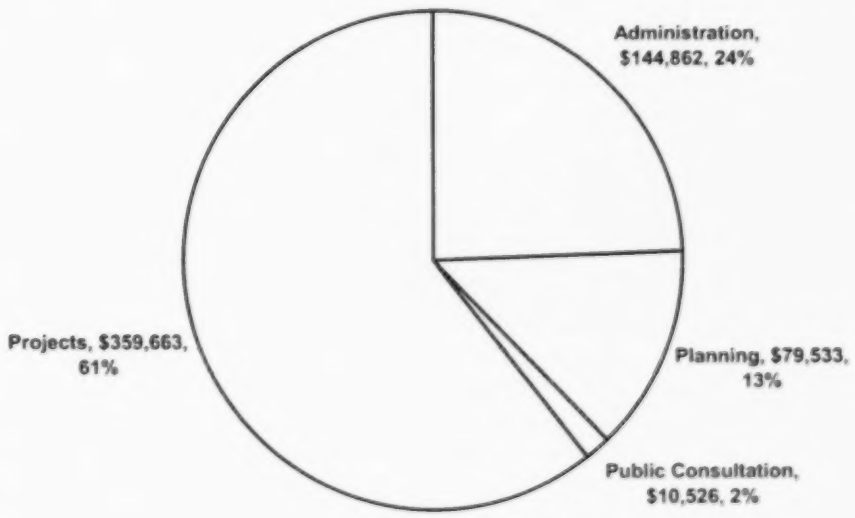


Figure 1. Fish Program expenditures for the 2002/03 fiscal year.
an additional $43,763 from the overall fund was spent on Public consultation, 55% of which would be Fisheries share or $24,070 which would bring this task up to 6%

Table 1. Detailed Fish Program budget expenditures for the 2002/2003 fiscal

Cost Category	Task	Specific Project	Project Costs	Total Expended	% Expended	% Budgeted
Administration	Base 1			$144,862	24%	* 24%
Planning	Base 2			$79,533	13%	11%
Public Consultation	Base 3			$10,527	2%	1%
Projects				$359,663	61%	64%
	03-01	Project Maintenance	$24,509	$24,509		
	03-02	Stocking	$27,550	$27,550		
	03-03	Report Writing	$31,750	$31,750		
	03-04	Classroom Kokanee	$11,136	$11,136		
	03-05	Dinosaur Reservoir Char	$38,191	$38,191		
	03-06	Dinosaur Reservoir Habitat Improvements	$65,107	$65,107		
	03-07	Small Lake Stocking Evaluations	$19,827	$19,827		
	03-08	Pygmy Whitefish Report	$13,634	$13,634		
	03-09	Parsnip Grayling Population Index	$61,264	$61,264		
	03-10	Bull Trout Indexing	$23,515	$23,515		
	03-11	Kokanee Escapement Survey	$40,128	$40,128		
	03-12	Extension	$0	$0		
	03-13	Grayling Recovery Plan Workshop	$3,053	$3,053		
		Base + Projects Total		$594,585		

Public Consultation included an additional $24,070 which came from the base fund * administration included $38804 contingency

Project Costs: includes operational costs, staff wages and travel, equipment & supplies, and vehicle costs.
Administration: includes staff wages, office rent, BCE administrative support, office supplies, and vehicle costs.
Planning: includes staff wages & travel, Technical Committee travel, vehicle costs.
Public Consultation: includes staff wages & travel, vehicle costs. BCH activities such as Natureline web site maintenance etc. comes from the base fund.

Entrenchment Fund Projects

Cost Category	Task	Specific Project	Project Costs	Total Expended	% Expended	% Budgeted
		ENTRENCHMENT FUND PROJECTS				
	03-14	Reservoir Bathymetry Project		$60,106		
	*	UNBC Legacy Fund		$101,115		
	03-15	Lake Trout Synthesis		$0		
	03-16	Equipment SEF		$33,282		
	03-17	Administrative Assistant		$0		
	03-18	Grayling Distribution Ingenika		$57,502		
	03-19	Pygmy Whitefish Distribution		$43,809		
	**	Technical Assistant				
	03-21	Grayling Movements Using Elemental Signatures		$15,159		
		Fish CD- Rom carry over 26,800 from 01		$28,000		
		TOTAL ENTRENCHMENT		$338,973		

* Legacy Fund carry over from 2002. ** Technical Assistant $61,252 charged to projects

WILDLIFE PROGRAM

Mari D. Wood

2003/04 PROJECT LIST

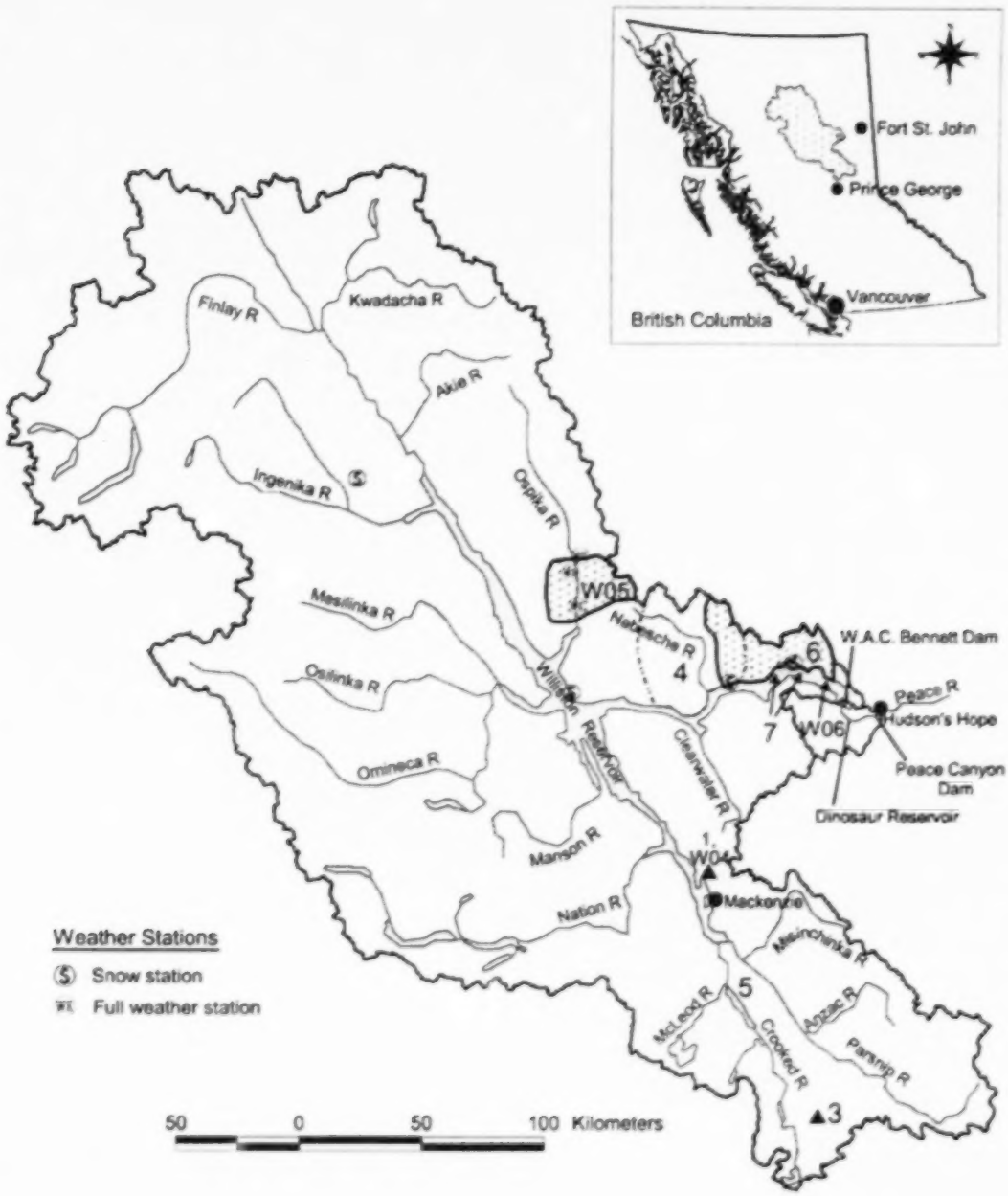
	PROJECT	TASK #	LOCATION
WILDLIFE BASE PROJECTS			
1	Mackenzie Migratory Songbird Monitoring (Co-op Project[1])	03-01	Parsnip
2	Weather Monitoring Stations	03-02	Watershed
3	Cottonwood Tree Enhancement	03-03	Parsnip
4	Nabesche Goats & Licks	03-04	Peace
5	Donna Creek Forestry/Biodiversity	03-05	Parsnip
6	Peace Arm Stone's Sheep Demographics	03-06	Peace
7	North Peace Prescribed Burns	03-07	Peace
8	Fisher Handbook & Trap Modification	03-08	Parsnip
9	Wildlife Extension	03-09	Office/Watershed
10	Data Analyses/Report Writing	03-10	Office
STRATEGIC ENTRENCHMENT FUND (SEF) PROJECTS			
11	Mugaha Marsh Enhancement	SEF-W04	Parsnip
12	Ospika Goat Project	SEF-W05	Finlay
13	Peace Land Acquisition	SEF-W06	Peace
14	Project Workshop & Strategic Plan Finalization	SEF-W07	Office
15	Project Evaluation (Ungulate Transplants)	SEF-W08	Watershed

[1] "Co-operative Projects" are projects that are administered and conducted by other agencies, but funded by the PWFWCP.

Abbreviations used for Agencies/Clubs:

Agencies and clubs that are partners on PWFWCP projects are listed in brackets at the end of each project's objective. The following abbreviations are used -

ABIT: Abitibi Consolidated (Mackenzie)
CWS: Canadian Wildlife Service
DU: Ducks Unlimited
HCTF: Habitat Conservation Trust Fund
MNO: Mackenzie Nature Observatory
MOF: Ministry of Forests
MWLAP: Ministry of Water, Land & Air Protection
SG: Slocan Mackenzie Operations



PROJECT NAME & NUMBER

03-01	Mackenzie Migratory Bird Monitoring
03-02	Weather Monitoring Stations
03-03	Cottonwood Tree Enhancement Trial
03-04	Nabesche Goats & Licks
03-05	Donna Cr Forestry/Biodiversity
03-06	Peace Stone's Sheep Demographics
03-07	North Peace Prescribed Burns
SEF-W04	Mugaha Marsh Enhancement
SEF-W05	Ospika Goat Project
SEF-W06	Peace Land Acquisition

PROJECT SUMMARIES

1. MACKENZIE MIGRATORY BIRD MONITORING (CO-OP PROJECT) (#03-01)

Project Objectives: To determine the population status and trends of neotropical migratory songbird populations in the northern Rocky Mountain Trench, and to identify those species that may be at risk from habitat loss and degradation. This is a long-term initiative of the Canadian Wildlife Service to monitor trends of songbird populations throughout North America, to which the PWFWCP contributes annual funding support. [CWS, MNO, PWFWCP, SG, ABIT]

2003/04 (Yr 9 of 10): The mist-nets and banding station at Mugaha Marsh were re-established, and a master bander was hired for the fall migration season. Volunteers from the MNO, other organizations, and the general public provided assistance on a full-time basis. Capture and banding took place between mid-July and mid-September. The PWFWCP once again provided funding support for this co-operative project.

2. WEATHER MONITORING STATIONS (#03-02)

Project Objectives: To obtain baseline snow depth and other microclimate data from various sites throughout the Williston Reservoir watershed that will supplement current projects, and help assess site suitability for past and future enhancement projects. [PWFWCP]

2003/04 (Year 6 of ongoing): Winter data from 8 remote stations located throughout the watershed were downloaded in the spring. Five of these stations were also maintained in the summer period to collect microclimate data for the Ospika Goat and Peace Sheep projects. In late fall, the 5 summer stations were downloaded and all 8 stations were again activated for the winter period.

3. COTTONWOOD TREE ENHANCEMENT TRIAL (#03-03)

Project Objectives: To determine if an access route (drilled hole), created through the outer sapwood of mature cottonwood trees, will hasten the establishment of heartrot and result in the creation of internal chambers that are useable by secondary cavity-using wildlife. [PWFWCP]

2003/04 (Year 2 of 6): One year after treatment, treated trees were assessed for their hole condition, health and retention status. No sign of advanced decay was observed but 42 of 82 tree holes had fungal growths present. No wildlife use was observed. Except for a 3% loss of stems due to wind damage, no change in tree health was observed. Field data was entered into the project database.

4. NABESCHE GOATS & LICKS (#03-04)

Project Objectives: To improve the distribution of minerals throughout the range of suitable goat terrain in the Nabesche River drainage through the establishment of artificial mineral licks, and as a result, expand the current range and population of goats in the drainage. [PWFWCP]

2003/04 (Year 6 of 8): Salt blocks were replenished at all control and treatment sites in the spring. An inventory of goat numbers and distribution within the control and treatment areas was conducted in early September: 89 goats were sighted within the control areas. No goats were seen in the treatment areas. Use of artificial salt block treatment sites by goats was also investigated in September. Control sites received moderate to heavy use, while use of treatment sites by goats from low to no use.

5. DONNA CREEK FORESTRY/BIODIVERSITY PROJECT (#03-05)

Project Objectives: To develop alternative forest harvesting techniques designed to benefit wildlife that utilise tree cavities (e.g. woodpeckers, red-breasted nuthatch, marten), and to monitor wildlife use of the harvested treatments at successive seral stages (i.e. approx. every 10 years) over the next 60 to 100 years. [PWFWCP, SG]

2003/04 (Year 12 of 14): Point count stations were re-established in preparation for proposed spring 2004 breeding bird surveys; bird surveys were subsequently postponed until spring 2005. An executive summary report providing a synopsis of all Phase 1 (early seral) reports was completed.

6. PEACE ARM STONE'S SHEEP DEMOGRAPHICS (#03-06)

Project Objectives: To determine differences in lamb survival rates and mortality causes between low and high elevation-wintering subpopulations of Stone's sheep along the Peace Arm, and to address mortality issues and/or develop management prescriptions based on study findings. [PWFWCP]

2003/04 (Year 1 of 4): This trial year of lamb capture and monitoring resulted in the capture of 8 lambs using net-gunning and drive-netting techniques; all lambs were fitted with expandable radio-collars. Five of the collared lambs died by September: causes of death included bear predation (1), wolverine predation (2), and unknown (2). The remaining 3 lambs survived through to the end of the winter, however, one dropped its' collar in March leaving only 2 collared lambs for monitoring into their second year. Fixed-wing radio-telemetry flights continued throughout the year to monitor seasonal habitat use and movements of all radio-collared sheep. One adult ewe died in January; wolf predation was the suspected cause of death. Five new ewes were captured and fitted with radio-collars in March; 6 previously collared ewes were also captured and 3 of the collars were replaced. Blood samples were taken from all females captured for serum progesterone analysis; results indicated all captured ewes were pregnant.

7. NORTH PEACE ARM PRESCRIBED BURNS (#03-07)

Project Objectives: To enhance forage for ungulates (primarily elk) and bears, and to provide foraging and breeding habitat for many wildlife species that require early seral habitats. [PWFWCP, MWLAP, MOF]

2003/04 (Yr 1 of 1): Two prescribed burns of aspen-dominated stands were conducted in May 2003 along the Peace Arm of Williston Reservoir. The East Branham burn covered 230 ha, while the smaller West Dunlevy burn resulted in 85 ha being burned. Significant fuel loads at the East Branham site (resulting from previous prescribed burn attempts) were a major contributory factor to the success of this burn. A fire-guard was cut at a 3rd burn site along the top of East Branham cliffs. The objective of this conifer conversion burn adjacent to the cliffs is to expand the grassland area for a wintering Stone's sheep population. Burning of the Brush piles, created during the fire-guarding activities, were attempted to be burned in October, however, wet conditions prevented the piles from burning completely. The piles are scheduled to be burned in fall 2004, and the standing conifer trees within the fireguard will be burned in spring 2005.

8. FISHER HANDBOOK & TRAP MODIFICATION (#03-08)

Project Objectives: To produce a field handbook that will assist forest planners, silviculture foresters, and field users to recognize forest characteristics that are important to fishers, and provide recommendations on best management approaches that would benefit fishers within the Sub-Boreal Spruce zone. And, to promote

the development of exclusionary devices and/or new trap types that will reduce the number of incidental captures incurred by fishers in marten trap sets. [PWFWCP]

2003/04 (Yr 1 of 2): Handbook activities were postponed until completion of the 5-year report for the Fisher Habitat Use project. Preliminary discussions were held with MWLAP and the Alberta Research Council to test possible exclusionary devices; due to anticipated project costs, project was deferred indefinitely.

9. WILDLIFE EXTENSION (#03-09)

Project Objectives: To provide data and expertise on wildlife management issues and planning processes in BC. [PWFWCP]

2003/04 (Ongoing): Input to various planning processes, wildlife management issues, and other wildlife research projects was provided throughout the year.

10. DATA ANALYSES/REPORT WRITING (#03-10)

Project Objectives: To analyse data and complete reports from previous fiscal projects. [PWFWCP]

2003/04 (Ongoing): The Donna Creek Phase 1 executive summary report and the 2002 Osprey Inventory report were completed in 03/04, and progress was made on the 20 Mile Point Stone's Sheep and Fisher Habitat Use final project reports (reports on *current* projects are discussed under applicable project summaries elsewhere in this document).

2003/04 STRATEGIC ENTRENCHMENT FUND PROJECTS

11. MUGAHA MARSH ENHANCEMENT (SEF-W04)

Project Objectives: To re-establish the vegetation community and structure originally present at Mugaha Marsh in order to benefit the ongoing bird monitoring program and enhance the area for early seral wildlife. [MNO, PWFWCP]

2003/04 (Year 1 of 1): Due to delays in planned enhancement activities by MNO and unscheduled high reservoir water levels in 2002, PWFWCP enhancement activities were not necessary and were deferred indefinitely.

12. OSPIKA GOAT/MINERAL LICK STUDY (SEF-W05)

Project Objectives: To determine the impacts of different forest harvesting options on mountain goat behaviour related to low-elevation mineral licks and trails. [PWFWCP, SG]

2003/04 (Yr 2 of 6): Mountain Goat Management Team meetings were held to discuss study design and other project issues for the overall Ospika Goat Study. One additional goat was captured on the west side of the drainage. The use of low elevation mineral licks by 19 radio-collared goats was monitored between May and November by remote telemetry stations and remote cameras placed at mineral licks and along access trails; all sites were visited and data downloaded on a biweekly basis. Photo cataloguing, data management, and data summarization was initiated for 2003 data. Analysis of 2002 telemetry and camera data continued throughout the year. PWFWCP also assisted with the refinement of mountain goat habitat supply models through a series of workshops with Slocan and other MGMT members. An updated version of the Goat Habitat Supply Modeling Report was drafted by Slocan and PWFWCP biologists by the end of March.

13. PEACE LAND ACQUISITION (SEF-W06)

Project Objectives: To secure, and thus protect from development, privately-owned parcels of land of high value wildlife habitat within the Williston watershed. [PWFWCP, Nature Trust]

2003/04 (Yr 1 of 1): The appraisal and potential purchase of the RMEF property along the north side of the Peace Arm of Williston Reservoir was deferred until the 04/05 fiscal.

14. PROJECT WORKSHOP & STRATEGIC PLAN FINALIZATION (SEF-W07)

Project Objectives: To develop strategic direction and wildlife projects for the Wildlife Program. [PWFWCP]

2003/04 (Yr 1 of 1): Preliminary discussions on-going.

15. PROJECT EVALUATION (UNGULATE TRANSLOCATIONS) (SEF-W08)

Project Objectives: To review a project or suite of projects (in this case, ungulate translocations) to ensure achievement of the PWFWCP strategic objectives related to evaluation and accountability, and to ensure that

the PWFWCP is effectively addressing strategic priorities identified for the Wildlife Sub-program. [PWFWCP]

2003/04 (Yr 1 of 1): A review of 2 ungulate translocations undertaken by the PWFWCP (Stone's sheep, Mt. Frank Roy; Rocky Mountain elk, Ingenika River) was completed by contractor, and a draft report was prepared.

WILDLIFE PROGRAM - FINANCIAL SUMMARY

The annual Wildlife Program budget in 2003/04 was $498,224 plus an additional $136,000 in carry-over funds from the 2002/03 fiscal, resulting in a fiscal budget totalling $634,224. Wildlife program expenditures in the 2003/04 fiscal year amounted to $472,884, 80% ($379,530) of which was spent on wildlife research, enhancement, and evaluation projects (Figure 2, Table 2). Under-expenditures on some budgeted projects and the deferral of other projects to 04/05 resulted in a cost savings of $161,340 which was carried over to the 2004/05 fiscal.

The Strategic Entrenchment Fund (SEF) budget for the Wildlife Program was $855,000. SEF expenditures to date include $257,256 in 2001/02, $221,137 in 2002/03, and $186,734 in 2003/04 (Table 3), leaving $189,873 remaining in the SEF fund for the 2004/05 fiscal year.

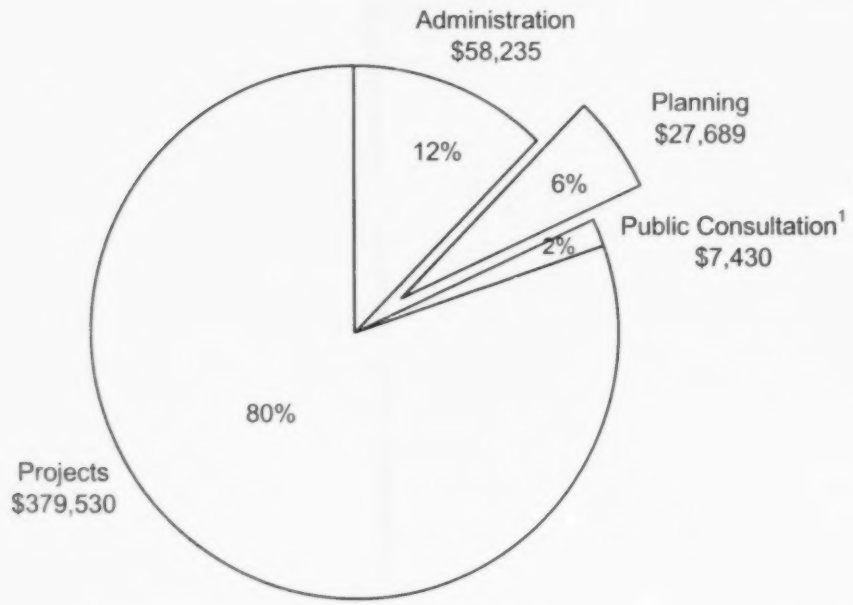


Figure 2. Wildlife Program expenditures in the 2003/04 fiscal year.

[1] Does not include additional monies spent from separate Public Consultation Program budget delivered directly through BC Hydro.

Table 2. Detailed Wildlife Program budget expenditures for the 2003/04 fiscal.

COST CATEGORY	TASK #	SPECIFIC PROJECT	PROJECT COSTS[1]	TOTAL EXPENDED	% Expended	% Budgeted
Administration[2]	03-B1	Base Costs	58,235	58,235	12%	11%
Planning[3]	03-B2	Base Costs	27,689	27,689	6%	6%
Public Consult[4]	03-B3	Base Costs	7,430	7,430	2%	2%
Projects	03-01	Mackenzie Migratory Bird (Co-op)	7,109			
	03-02	Weather Monitoring Stations	21,025			
	03-03	Cottonwood Tree Enhancement	12,408			
	03-04	Nabesche Goats & Licks	33,035			
	03-05	Donna Creek Forestry/Biodiversity	14,363			
	03-06	Peace Stone's Sheep Demographics	119,227			
	03-07	North Peace Prescribed Burns	85,548			
	03-08	Fisher Handbook & Trap Modification	0			
	03-09	Wildlife Extension[5]	3,631			
	03-10	Data Analyses/Report Writing[6]	32,490			
	SEF	Strategic Entrenchment Fund Projects[7]	50,694	379,530	80%	81%
TOTAL				**$472,884**	**100%**	**100%**

[1] Project Costs: includes operational costs, staff wages and travel, equipment & supplies, and vehicle costs.
[2] Administration: includes staff wages, office rent, BCE administrative support, office supplies, vehicle costs.
[3] Planning: includes staff wages & travel, Technical Committee travel, vehicle costs.
[4] Public Consultation: includes operational costs, BCH wages, program staff wages & travel, vehicle costs.
[5] Wildlife Extension: includes staff wages for input to wildlife species and habitat protection/management activities and assistance on non-PWFWCP projects.
[6] Data Analyses /Report Writing: includes consultant and staff wages for completion of previous project reports.
[7] Strategic Entrenchment Fund Projects: includes staff wages, travel, and vehicle costs associated with the Ospika Goat and Project Evaluation projects; Operational costs are reported separately under Table 3.

Table 3. Strategic Entrenchment Fund (SEF) operational expenditures for the 2003/04 fiscal (hard costs only).

COST CATEGORY	TASK #	SPECIFIC PROJECT	PROJECT COSTS[1]	TOTAL EXPENDED	% Expended	% Budgeted[2]
Planning	SEF-W07	Project Workshop & Strategic Plan	0	0		13%
Projects	SEF-W04	Mugaha Marsh Enhancement	0	0		4%
	SEF-W05	Ospika Goat Project	184,434	184,434	99%	57%
	SEF-W06	Peace Land Acquisition	0	0		24%
	SEF-W08	Project Evaluation	2,300	2,300	1%	2%
TOTAL				**$186,734**	**100%**	**100%**

[1] Project Costs: hard costs only (see Table 2 for staff wages and travel, minor equipment & supplies, and vehicle costs associated with the delivery of SEF projects).
[2] % Budgeted: values based on initial budget for project and total budgeted monies for the 5 projects ($255,000); 3 projects were deferred, thus no expenditures.